IN THE CLAIMS

Please amend the claims as follows:

1. (Withdrawn) A method of p-type doping in ZnO comprising:

forming an acceptor-doped material having ZnO under reducing conditions, thereby insuring a high donor density; and

annealing the specimens of said acceptor-doped material at intermediate temperatures under oxidizing conditions so as to remove intrinsic donors and activate impurity acceptors.

2. (Withdrawn) The method of claim 1, wherein said reducing conditions comprise a hydrogen containing atmosphere.

3. (Withdrawn) The method of claim 1, wherein said reducing conditions comprise a non- hydrogen containing atmosphere.

4. (Withdrawn) The method of claim 1, wherein said acceptor-doped material comprises a substrate, a n-type ZnO layer deposited on said substrate, and a p-type layer deposited on said n-type ZnO layer.

5. (Withdrawn) The method of claim 1, wherein said intermediate temperatures comprise a temperature range between 200 °C and 700 °C.

6. (Withdrawn) A method of forming p-n junctions using p-type ZnO comprising:

forming an acceptor-doped material having ZnO under reducing conditions, thereby insuring a high donor density; and

annealing the specimens of said acceptor-doped material at intermediate temperatures under oxidizing conditions so as to remove intrinsic donors and activate impurity acceptors.

7. (Withdrawn) The method of claim 6, wherein said reducing conditions comprise a hydrogen containing atmosphere.

8. (Withdrawn) The method of claim 6, wherein said reducing conditions comprise a non- hydrogen containing atmosphere.

9. (Withdrawn) The method of claim 6, wherein said acceptor-doped material comprises a substrate, a n-type ZnO layer deposited on said substrate, and a p-type layer deposited on said n-type ZnO layer.

10. (Withdrawn) The method of claim 6, wherein said intermediate temperatures comprises a temperature range between 200 °C and 700 °C.

11. (Currently Amended) A wide band gap semiconductor device comprising:

-a substrate;

a n-type ZnO layer formed on said substrate; and

a p-type ZnO layer formed on said n-type ZnO layer;

wherein said n-type ZnO layer and said p-type ZnO layer are annealed in air to activate p-type conductivity

~~an acceptor-doped material having ZnO that is formed under reducing conditions, thereby insuring a high donor density; wherein the specimens of said acceptor-doped material are~~

~~annealed at intermediate temperatures under oxidizing conditions so as to remove intrinsic donors and activate impurity acceptors~~.

12. (Currently Amended) The wide band gap semiconductor device of claim 11, wherein said p-type ZnO layer is produced ~~said~~ in reducing conditions ~~comprise~~ comprising a hydrogen containing atmosphere.

13. (Original) The wide band gap semiconductor device of claim 11, wherein said p-type ZnO layer is produced ~~said~~ in reducing conditions ~~comprise~~ comprising a non-hydrogen containing atmosphere.

14. Canceled.

15. (Currently Amended) The wide band gap semiconductor device of claim 11, wherein said n-type ZnO layer and said p-type ZnO layer are annealed ~~intermediate temperatures comprise a temperature range~~ between 200 °C and 700 °C.

16. (Currently Amended) A p-n junction comprising:

a substrate;

a n-type ZnO layer formed on said substrate; and

a p-type ZnO layer formed on said n-type ZnO layer;

wherein said n-type ZnO layer and said p-type ZnO layer are annealed in air to activate p-type conductivity ~~an acceptor doped material having ZnO that is formed under reducing conditions, thereby insuring a high donor density; wherein the specimens of said acceptor doped material are annealed at intermediate temperatures under oxidizing conditions so as to remove intrinsic donors and activate impurity acceptors~~.

17. (Currently Amended) The p-n junction of claim 16, said p-type ZnO layer is produced in reducing conditions comprising a hydrogen containing atmosphere ~~wherein said reducing conditions comprise a hydrogen containing atmosphere~~.

18. (Currently Amended) The p-n junction of claim 16, wherein said p-type ZnO layer is produced in reducing conditions comprising a non- hydrogen containing atmosphere ~~wherein said reducing conditions comprise a non- hydrogen containing atmosphere~~.

19. (Original) The p-n junction of claim 16, wherein said acceptor-doped material comprises a substrate, a n-type ZnO layer deposited on said substrate, and a p-type layer deposited on said n-type ZnO layer.

20. (Currently Amended) The p-n junction of claim 16, said n-type ZnO layer and said p-type ZnO layer are annealed between 200 °C and 700 °C ~~wherein said intermediate temperatures comprises a temperature range between 200 °C and 700 °C~~.